

CLAIMS

1. A radio communication device (1) for use near to a body (10), the device (1) comprising:

5 a receiver (2) for receiving a radio signal in a communication link with another radio communication device (9);

a detector (4) for detecting deterioration in quality of the radio signal; and

10 a processor (5) for determining if the detected deterioration in signal quality is likely to be caused by the body (10) blocking the signal and, upon such determination, causing the device (1) to try to maintain the communication link.

2. The radio communication device (1) of claim 1, wherein the processor (5) causes the device (1) to try to maintain the communication link by extending the time for which the receiver (2) continues to try to receive signals in the communication link after signal quality has deteriorated.

3. The radio communication device (1) of any one of the preceding claims, wherein the processor (5) causes the device (1) to try to maintain the communication link by causing the receiver (2) to continue to try to maintain timing synchronisation with the other device (9) after signal quality has deteriorated.

25 4. The radio communication device (1) of any one of the preceding claims, further comprising a user interface (6) and wherein the processor (5) causes the device (1) to try to maintain the communication link by alerting a user via the user interface (6).

30 5. The radio communication device (1) of any one of the preceding claims, wherein the processor (5) causes the device (1) to try to maintain the

communication link by altering transmission of a radio signal to the other communication device (9).

6. The radio communication device (1) of any one of the preceding
5 claims, further comprising an adaptable antenna arrangement (7,8) and
wherein the processor (5) causes the device (1) to try to maintain the
communication link by controlling the antenna arrangement (7,8) to enhance a
propagation path.

10 7. The radio communication device (1) of any one of the preceding
claims, wherein the processor (5) determines that the detected deterioration in
signal quality is likely to be caused by the body (10) blocking the signal when
the detected signal quality deteriorates from an acceptable level to an
unacceptable level in less than a given period.

15 8. A radio communication device (1) for use near to a body (10), the
device (1) comprising:
a detector (4) for detecting the quality of a received radio signal; and
a processor (5) for determining that the signal is likely to have been
20 blocked by the body (10) if the detected signal quality deteriorates from an
acceptable level to an unacceptable level in less than a given period.

9. The radio communication device (1) of any one of the preceding
claims, wherein the processor (5) compares the detected signal quality with a
25 good signal quality threshold level and a bad signal quality threshold level and
determines that the signal is likely to have been blocked by the body (10) if the
detected signal quality deteriorates from the good signal quality threshold level
to the bad signal quality threshold level.

30 10. The radio communication device (1) of any one of the preceding
claims, wherein the detector (4) detects the strength of the received signal and

the processor (5) determines that the signal is likely to have been blocked by the body (10) based on the detected signal strength.

11. The radio communication device (1) of any one of the preceding
5 claims, wherein the detector (4) detects the bit error rate of the received signal and the processor (5) determines that the signal is likely to have been blocked by the body (10) based on the detected bit error rate.

12. The radio communication device (1) of any one of the preceding
10 claims, wherein the detector (4) detects the delay spread of the radio signal and the processor (5) determines that the signal is likely to have been blocked by the body (10) based on the detected delay spread.

13. The radio communication device (1) of any one of the preceding
15 claims, wherein the detector (4) detects the time of flight of data packets in the received signal and the processor (5) determines that the signal is likely to have been blocked by the body (10) based on the detected time of flight.

14. The radio communication device (1) of any one of the preceding
20 claims, wherein the given period is less than the duration of a data packet in the received signal.

15. The radio communication device (1) of any one of the preceding
claims, wherein the processor (5) determines that the signal is likely to have
25 been blocked by the body (10) only if the detected signal quality remains deteriorated for more than a minimum period.

16. The radio communication device (1) of any one of the preceding
claims, wherein the processor (5) estimates when the range from which the
30 signal is received is very short and determines that the detected deterioration in signal quality is likely to be caused by the body (10) blocking the signal only if the range was very short when the signal quality deteriorated.

17. The radio communication device (1) of any one of claims 9 to 16, wherein the processor (5) estimates that the range from which the signal is received is very short when the detected signal quality is better than the good signal quality threshold level.

18. The radio communication device (1) of any one of the preceding claims, wherein the processor (5) estimates the range from which the signal is received by comparing received signal strength with the strength at which the signal was transmitted.

19. The radio communication device (1) of any one of the preceding claims, wherein the processor (5) causes the receiver (2) to detect when the device (1) remains synchronised with the other device (9) and only causes the device (1) to continue to try to maintain the communication link whilst the devices (1,9) remain synchronised

20. A wearable radio communication device (1) according to any one of the preceding claims.

21. A method of operating a radio communication device (1) near to a body (10), the method comprising:

receiving a radio signal in a communication link with another radio communication device (9);

25 detecting deterioration in quality of the radio signal; and

determining if the detected deterioration in signal quality is likely to be caused by the body (10) blocking the signal and, upon such determination, causing the device (1) to try to maintain the communication link.

30 22. The method of claim 21, comprising causing the device (1) to try to maintain the communication link by extending the time for which the device

(1) continues to try to receive signals in the communication link after signal quality has deteriorated.

23. The method of claim 21 or claim 22, comprising causing the device (1) to try to maintain the communication link by continuing to try to maintain synchronisation timing with the other device (9) after signal quality has deteriorated.

24. The method of any one of claims 21 to 23, comprising causing the device (1) to try to maintain the communication link by alerting a user via a user interface (6).

25. The method of any one of claims 21 to 24, comprising causing the device (1) to try to maintain the communication link by altering transmission of a radio signal to the other communication device (9).

26. The method of any one of claims 21 to 25, comprising causing the device (1) to maintain the communication link by controlling an adaptable antenna arrangement (7,8) to enhance a propagation path.

27. The method of any one of claims 21 to 26, comprising determining that the detected deterioration in signal quality is likely to be caused by the body (10) blocking the signal when the detected signal quality deteriorates from an acceptable level to an unacceptable level in less than a given period.

28. A method of determining when a radio signal is blocked by a nearby body (10), the method comprising:

detecting the quality of a received radio signal; and
30 determining that the signal is likely to have been blocked by the body (10) if the detected signal quality deteriorates from an acceptable level to an unacceptable level in less than a given period.

29. The method of any one of claims 21 to 28, comprising comparing the detected signal quality with a good signal quality threshold level and a bad signal quality threshold level and determining that the signal is likely to have been blocked by the body (10) if the detected signal quality deteriorates from the good signal quality threshold level to the bad signal quality threshold level.

30. The method of any one of claims 21 to 29, comprising detecting the strength of the received signal and determining that the signal is likely to have been blocked by the body (10) based on the detected signal strength.

31. The method of any one of claims 21 to 30, comprising detecting the bit error rate of the received signal and determining that the signal is likely to have been blocked by the body (10) based on the detected bit error rate.

32. The method of any one of claims 21 to 31, comprising detecting the delay spread of the radio signal and determining that the signal is likely to have been blocked by the body (10) based on the detected delay spread.

33. The method of any one of claims 21 to 32, comprising detecting the time of flight of data packets in the received signal and determining that the signal is likely to have been blocked by the body (10) based on the detected time of flight.

34. The method of any one of claims 21 to 33, wherein the given period is less than the duration of a data packet in the received signal.

35. The method of any one of claims 21 to 34, comprising determining that the signal is likely to have been blocked by the body (10) only if the detected signal quality remains deteriorated for more than a minimum period.

36. The method of any one of claims 21 to 35, comprising estimating when the range from which the signal is received is very short and determining that the detected deterioration in signal quality is likely to be caused by the body (10) blocking the signal only if the range was very short when the signal 5 quality deteriorated.

37. The method of any one of claims 29 to 36, comprising estimating that the range from which the signal is received is very short when the detected signal quality is better than the good signal quality threshold level.

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38. The method of any one of claims 21 to 37, comprising estimating the range from which the signal is received by comparing received signal strength with the strength at which the signal was transmitted.

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39. The method of any one of claims 21 to 38, comprising detecting when the device (1) remains synchronised with the other device (9) and only continuing to try to maintain the communication link whilst the devices (1,9) remain synchronised

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40. Computer program code adapted to carry out the method of any one of claims 21 to 39 when processed by a processor (5).